LIFE HISTORY OF THE BEAR PRAWN, *PENAEUS SEMISULCATUS*, IN COASTAL WATERS OF SOUTHWEST TAIWAN

To establish an effective system for prawn stock enhancement in Taiwan, the Tungkang Marine Laboratory selected the coastal waters along southwest Taiwan as an experimental area and conducted a series of ecological studies on commercially important prawns from July 1982 to December 1987. This paper reviews the life history of the bear prawn, *Penaeus. semisulcatus*, in this area. A strategy for stock enhancement for this species is proposed.

Distribution

The prawns occurred mainly from November to March in waters between Fonbitou and Fangliao at depths of 20–40 m, and in July, between the estuary of Linpien River and Fangliao at depths of 20–30 m. Larger prawns in general occurred in deeper offshore waters (Su and Liao, 1984; Su, 1988).

Reproduction

The prawns seem to spawn throughout the year with a peak season from December to March. The main spawning ground lies in waters between Dapong Bay and the mouth of Linpien River at depths of 20–40 m (Su and Liao, 1984; Su, 1988).

Emigration from Nursery Grounds

The prawns emigrated from Dapong Bay to open coastal waters from July to December, mostly during the new moon or full moon phase, 1–2 months after the rainy season. The mean carapace length of emigrating prawns ranged from 20.7–33.6 mm for females, and 20.4–29.6 mm for males. Early emigrants were usually the smaller ones which migrate mainly from June to August (Su and Liao, 1987).

Food and Feeding

Based on frequency of occurrence the food items were, in order of relative importance, crustaceans, molluscs, detritus and sand granules for prawns from Dapong Bay; and detritus, sand granules and crustaceans for prawns from the open coast. Volumetrically, the order was the same as that described above (Su, 1988).

Growth

The growth rate was 3.21 mm in CL and 5.6 g in body weight per month for females, and 1.8 mm in CL and 3.14 g in body weight per month for males.

Life History and Stock Enhancement

By integrating the above information, the life history model of *P. semisulcatus* is summarised as shown in Fig. 1. For stock enhancement, it is recommended that: (1) postlarvae should be released into Dapong Bay from January to March to enhance the recruitment in the nursery life phase; (2) juveniles should be released into coastal waters to supplement the recruitment in the offshore life phase; and (3) juveniles should be released when they are 10–15 mm in CL, optimally during March to May, and ideally in the nearshore waters between Tungkang and Linpin.

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Literature Cited

Su, M.S. and Liao, I.C. 1984. Preliminary studies on the distribution and the stomach contents of some commercial prawns from the coast of Tungkang, Taiwan. 57–71. In I.C. Liao and R. Hirano (eds) 'Proceedings of ROC-JAPAN symposium on mariculture'. TML Conference Proceedings, No. 1.

Su, M.S. and Liao, I.C. 1987. Ecological studies on commercially important prawns from the coastal waters of Southwest Taiwan — II. Emigration of *Penaeus semisulcatus* from Dapong Bay. Journal of the Fisheries Society of Taiwan **14**(1): 49–59.

Su, M.S. 1988. Some ecological considerations for stock enhancement of commercially important prawns along the coastal waters of southwest Taiwan. Acta Oceanographica Taiwanica **19**: 146–165.

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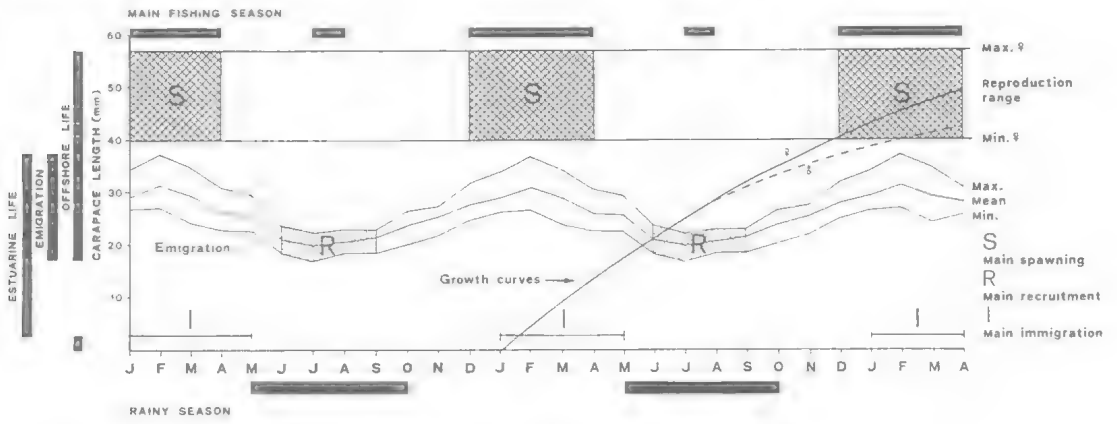

FIG. 1. Model of the life-history of *P. semisulcatus* in the coastal waters of southwest Taiwan.